IN THE CLAIMS

1. (Currently Amended) A method for compressing image data of an image, comprising:

transforming the image data into a bit plane of first and second values;

comparing each image element with a previous image element and if they are equal, recording a first value into a bit plane~~,~~ and if they are not equal, recording a second value into the bit plane; and

encoding repeating first and second values in the bit plane into a bit plane index~~,~~ wherein the compressed image is able to be decompressed using the bit plane index and the bit plane.

2. (Original) The method according to claim 1, further comprising the initial step of: comparing each image element with a previous image element and if they are within a predetermined range of each other, modifying the image element to be equal to the previous image element; where repetition is increased to enable lossy compression of the image.

3. (Original) The method according to claim 1, wherein the comparison of the image elements is performed in raster order, from left to right and then top to bottom.

4. (Original) The method according to claim 1, wherein the transformation is a repetition coded compression horizontal transformation, repetition coded compression vertical transformation, repetition coded compression predict transformation, repetition coded compression adaptive transformation or a repetition coded compression multidimensional transformation.

5. (Original) The method according to claim 1, wherein each image element is a pixel.

6. (Original) The method according to claim 1, wherein the first value is a 1, and the second value is a 0.

7. (Original) The method according to claim 4, wherein for the repetition coded compression horizontal transformation, repetition coded compression vertical transformation, repetition coded compression predict transformation, a single bit plane is used to store the values.

8. (Original) The method according to claim 4, wherein for the repetition coded compression multidimensional transformation, comparison is in both horizontal and vertical directions, and a separate bit plane is used for each direction.

9. (Original) The method according to claim 8, wherein the bit-planes for the horizontal and vertical directions are combined by binary addition to form a repetition coded compression bit-plane.

10. (Original) The method according to claim 8, wherein the combining is by binary addition, only the second values being stored for lossless reconstruction of the image.

11. (Original) The method according to claim 9, wherein the result of the combining is repetition coded compression data values, all other image data values being able to be reconstructed using the repetition coded compression data values, and the bit planes for the horizontal and vertical directions.

12. (Original) The method according to claim 1, wherein storage in bit planes is in a matrix.

13. (Original) The method according to claim 1, wherein a single mathematical operation is performed for each image element.

14. (Original) The method according to claim 4, wherein for the repetition coded compression predict transformation, a mapping value is used to replace repeating image

elements.

15. (Original) The method according to claim 14, wherein the mapping value is a value that does not exist in the bit plane.

16. (Original) The method according to claim 14, wherein the mapping value is a value that exists in the bit plane.

17. (Original) The method according to claim 16, wherein if the image element is equal to the previous image element and not equal to the mapping value, the image element is replaced with the mapping value.

18. (Original) The method according to claim 16, wherein if the image element is equal to the mapping value and equal to the previous image element, the image element is not replaced.

19. (Original) The method according to claim 16, wherein if image element is equal to the mapping value and not equal to the previous image element, the image element is replaced with the previous image element.

20. (Currently Amended) A system for compressing image data of an image, comprising:

a data transforming module to transform the image data into a bit plane of first and second values by comparing each image element with a previous image element and if they are equal, recording a first value into the bit plane~~;~~ and if they are not equal, recording a second value into the bit plane;

a data rearranging module to rearrange the transformed image data by causing elements of the image data to be repetitive;

and an encoder to encode repeating first and second values in the bit plane into a bit

plane index÷, wherein the compressed image is able to be decompressed using the bit plane index and the bit plane.

21. (Original) The system according to claim 20, wherein the number of elements repeated is dependant upon a predetermined level of image quality selected for the compressed image.

22. (Original) The system according to claim 20, further comprising a source coder to receive the rearranged data as input.

23. (Original) The system according to claim 22, wherein the source coder comprises an arithmetic coder preceded by a run length encoder.

24. (Original) The system according to claim 20, further comprising: a camera for capturing at least one image and for supplying digital data to the data transforming module; a reshaping block for rearranging the digital data into a matrix of image data values; a processor for receiving the matrix of image data values and compressing the image data values to form compressed data; and a memory for storing the compressed data.

25. (Original) The system according to claim 24, wherein the camera is analog, and the system further comprising an analog-to-digital converter to convert the analog image into digital data.

26. (Original) A method for decompressing compressed data, comprising:

run-length decoding the compressed data;

arithmetically decoding the compressed data;

reverse transforming the decoded data; and

rearranging the transformed decoded data into a lossless decompressed form.

27. (Original) The method according to claim 26, wherein the reverse transformation is one dimensional including a horizontal variant, a vertical variant, or a predict variant.

28. (Original) The method according to claim 26, wherein the reverse transformation is two dimensional such as a multidimensional variant.

29. (Original) The method according to claim 26, wherein the rearrangement of the transformed decoded data comprises a reversible sort process and a last to first rearrangement.

30. (Original) The method according to claim 26, wherein the compressed data is image data.

31. (Original) The method according to claim 30, wherein the image data originates from a photo, drawing or video frame.

32. (Original) A system for decompressing compressed data, comprising:

a run-length decoder and an arithmetic decoder for decoding the compressed data;

a reverse transforming module to reverse transform the decoded data; and

a data rearranging module to rearrange the transformed decoded data into a lossless decompressed form.

33. (Original) The system according to claim 32, wherein the reverse transformation is one dimensional including a horizontal variant, a vertical variant, or a predict variant.

34. (Original) The system according to claim 32, wherein the reverse transformation is two dimensional such as a multidimensional variant.

35. (Original) The system according to claim 32, wherein the rearrangement of the transformed decoded data comprises a reversible sort process and a last to first rearrangement.

36. (Original) The system according to claim 32, wherein the compressed data is image data.

37. (Original) The system according to claim 36, wherein the image data originates from a photo, drawing or video frame.

38. (Original) The system according to claim 32, wherein a portion of the image data is compressed lossless while the remaining portion of the image data is compressed lossy.

39. (Original) The system according to claim 32, wherein rearranged data is passed to an input of a source coder.

40. (Original) The system according to claim 39, wherein the source coder comprises an arithmetic coder preceded by a run length encoder.

41. (Original) The system according to claim 32, further comprising additional compression of the rearranged image data wherein each element is compared with a previous element and: (c) if they are equal, a first value is recorded; and (d) if they are not equal, a second value is recorded.

42. (Original) The system according to claim 41, wherein each element is a pixel.

43. (Original) The system according to claim 41, wherein the first value is a 1, and the second value is a 0.

44. (Original) The system according to claim 41, wherein the first and second values are stored in a bit plane.

45. (Original) The system according to claim 41, wherein for a one-dimensional compression, a single bit plane is used to store the values.

46. (Original) The system according to claim 41, wherein for a two-dimensional compression, comparison is in both horizontal and vertical directions, a separate bit plane being used for each direction.

47. (Original) The system according to claim 41, wherein the bit-planes for the horizontal and vertical directions are combined by binary addition to form a repetition coded compression bit-plane.

48. (Original) The method according to claim 47, wherein the combining is by binary addition, only the second values being stored for lossless reconstruction of the image.

49. (Original) The system according to claim 48, wherein the result of the combining is repetition coded compression data values, all other image data values being able to be reconstructed using the repetition coded compression data values, and the bit planes for the horizontal and vertical directions.

50. (Original) The system according to claim 44, wherein storage in bit planes is in a matrix.

51. (Original) The system according to claim 41, wherein a single mathematical operation is performed for each element.

52. (Original) The system according to claim 21, wherein the predetermined level of image quality is user defined.

53. (Original) The method according to claim 1, wherein the method is used for an application selected from the group consisting of: medical image archiving, medical image transmission, database system, information technology, entertainment, communications applications, and wireless application, satellite imaging, remote sensing, and military applications.